Soil Conservation

September 1978

U.S. Department of Agriculture

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From the Administrator

The Public Voices Its Concern

All across the Nation this summer, SCS had the unique opportunity, in public meetings related to the Resources Conservation Act, to bring together many people to discuss resource conservation problems.

In meeting the goals of the act, we do not want the ideas and suggestions to be all our own. We need the views which the public gives us. We do not want to overlook considerations that are important to various groups. In addition, we want to know if there is national consensus on what the future of conservation should be.

From the enthusiastic cooperation of sponsoring groups who planned the meetings, we could foresee the success of this public participation effort. The groups included councils and boards of public and private organizations as well as local, State, and Federal agencies. It was encouraging to see the public response in these local meetings and to see people eagerly use the opportunity to express their concerns about land and water conservation.

Participants voiced many concerns. For example, watermelon growers in Utah are concerned about the loss of suitable land for their crops to urban development. Other specialty crop farmers expressed similar thoughts. Such individual problems might never have come to light in a program handled exclusively at the national or State level.

Again and again in the meetings, people spoke of their desire for careful planning for the future of the country's natural resources. Participants stressed the need for a practical balance between conservation and community needs. They also stressed the need to consider costs in planning conservation programs.

And for SCS, an added benefit of these meetings was an opportunity to tell more people about our agency and soil conservation districts. Involving the public in land and water conservation can help immeasurably in developing soil and water conservation programs for the future.

Mel Davis

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Secretary of Agriculture

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Soil Conservation Service

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Managing a cypress pond for trees and wildlife is a challenge. See article beginning on page 12. (Photo, Anne Schuhart.)

Farming Above the Arctic Circle

by Roger D. Rayburn

North America's "farthest north" farmers, Bill Fickus and his family, demonstrate Alaska's bright agricultural future.

When the 1896 Alaskan Gold Rush "panned out," many fortune hunters stayed on as farmers. Despite this early influx of homesteaders, agriculture in Alaska never thrived as dramatically as it did elsewhere in the United States. Today, Alaska is pushing hard to develop its agricultural potential.

"Frontier farmers" like Bill Fickus provide much of that push. With his wife, Lillian, and four children, Bill operates a general purpose farm 75 miles north of the Arctic Circle and only 1,500 miles from the North Pole. The family produces grass and grain. They also grow cool-season vegetables like broccoli, peas, and potatoes for sale to nearby villages. They deliver the produce in their own aircraft. The Fickuses hope to expand this part of their operation soon.

Because it is located in a marginal area for agriculture—Crevice Creek in Alaska's Brooks Range—the Fickus farm clearly demonstrates what other farmers could do in more favorable parts of the State. It also provides some of the first important data on an agricultural operation so far north.

More intensive development of Alaskan agriculture will help meet increased world demand for food and fiber. Alaska is located favorably along major shipping lanes in the northern Pacific.

In a recent statewide exploratory soil survey, the Soil Conservation Service identified at least 20 million acres of potential farmland in Alaska. Most of it is undeveloped acreage in the Yukon Valley, 75 miles south of the Fickus farm. Bill Fickus and his family are at least 40 miles beyond any soil area identified as having even marginal agricultural potential.

Yet Bill Fickus did not choose his farmstead at random. He first saw and liked the area while on a prospecting trip in 1958. In July 1963, he returned with Lillian and their family. The children—Debbie, Matt, Linda, and Timmy—now range in age from 12 to 19. All share in the farm chores.

"When we first came here, there was nothing but spruce forest, an old mine, and an airstrip," Bill recalls. "We've added a few things since then." The "few things" include a log cabin, which the family occupied for 5 years; the two-story log house they now occupy; and a large barn. They cut all the logs nearby and hauled them in on a dogsled.

Like an airborne Noah, Bill himself flew in small livestock like chickens, ducks, and turkeys. A professional guide, Bill also maintains a herd of about 10 horses that he uses in his business. The horses would not have made good passengers in the Fickus aircraft. "We trucked the horses to the end of the road and then drove them the rest of the way," said Bill.

At left, Timmy (left) and Bill Fickus with SCS District Conservationist Roger Rayburn examine soils on the Fickus farm. The soils, originally permafrost soils, have thawed with exposure to the sun and produce excellent forage crops. At right, Debbie (left) and Linda Fickus weed the potato patch. The raised beds aid in warming the soil.

Permafrost Soils

Permafrost soils are frozen all year round. Some thaw and drain rapidly after clearing. Others, like those on the Fickus farm, are deep, level, and peaty and are almost impossible to drain thoroughly. They remain cold and soggy, thus limiting the choice of plant varieties and cultural practices. They provide a short growing season and are considered marginal for crop production.

"Except for a curious bear, we didn't have any trouble."

Since 1969, Bill and his family have cleared about 30 acres of land—first with an ax and hand saw, and later with a bulldozer. Because his farm is located many miles from the nearest road, Bill brings much of his farm equipment in by air, in pieces, and then reassembles it.

"We're using basically horse-drawn equipment that we pull with a jeep," Bill reports. "What I haven't been able to find, I've built myself." So far, he has built a plow and is working on a threshing machine.

Behind much of Bill's success is the fact that he recognizes the value of using land within its capability and applying conservation practices in a planned sequence. A cooperator with the Fairbanks Soil Conservation Subdistrict, he worked closely with the subdistrict and with SCS to develop a conservation plan for his farm.

One conservation measure the Fickuses use is a crop rotation schedule. Another is establishing 'Garrison' creeping foxtail as a pasture and hay crop. Garrison is well suited to the cold, wet conditions characteristic of the farm's permafrost soils. Other measures include minimum tillage, crop residue management, and pasture and hayland management.

For planning purposes, Bill's farm offers an interesting opportunity to collect important and useful information for future agriculture in Alaska. Currently, the most northern of Alaska's major agricultural enterprises are concentrated in the Tanama Valley at Fairbanks—about 200 miles south of Crevice Creek.

Back in the Gold Rush days, miners and others living in the Yukon River Valley (about 75 miles south of the present Fickus farm) supplemented their diets with home-grown produce. Later, the Rampart Agricultural Experiment Station was established on the Yukon and grew excellent produce, small grains, and forage crops.

Now, North Slope exploration and the Alaskan pipeline reach into many of these formerly isolated areas. The Alaska Native Land Claim placed about 40 million acres—many of them with agricultural potential—under private ownership.

Long-range planners foresee a positive trend for Alaska's agriculture. Much of the credit will go to people like Bill Fickus and his family. They may be the first of many with the will and ability to succeed in far northern agriculture.

Mr. Rayburn was district conservationist, SCS, Fairbanks, Alaska, and is now district conservationist in Cheboygan, Mich.

Bill Fickus built his plow with truck wheels and iron parts he flew in to his isolated farm and with wood from the area.

SCS Reaches Isolated Communities

by Maximino Díaz

For people in a small Puerto Rican mountain community, resource conservation measures made farming more profitable and the quality of life more satisfying.

Just as the tour books promise, visitors to Puerto Rico find scenic stretches of white, sandy beaches and palm fronds stirring in light equatorial breezes.

Seldom mentioned in the tour books, however, is another part of Puerto Rico. It lies in the rugged, mountainous interior, where residents are isolated by geography and economics from the busy urban centers like San Juan and Ponce. Most of the people in these small mountain communities are farmers, who grow tobacco, coffee, and other crops on the steeply sloping hillsides.

Life there is often harsh and difficult. For at least seven farm families, however, resource conservation provided the key to higher profits and a better standard of living. The seven farms lie in the small community of Ward Pozas, Ciales.

Like many other mountain communities, Ward Pozas faced a combination of adverse conditions that threatened to disrupt traditional farming practices. Erosion depleted valuable topsoil on the hilly landscape. Water often had to be picked up at lower levels and hand carried several hundred feet uphill. Labor for hand harvesting became less available.

Farmers reacted by reducing the acreage devoted to their main cash crop. Consequently, their farm income was sharply reduced.

The seven farm families in Ward Pozas wanted to do something about their problem. As a group, they requested assistance from the Norte Soil Conservation District, which immediately gave the situation top priority. Members of the district board of supervisors visited the area and met with local farmers to assess the situation.

Because of the steep slopes and badly depleted soils, the farmers and district supervisors decided that it would be more profitable to shift to livestock production. A more efficient water supply system also was needed to serve both the new livestock enterprise and farm homes. The district requested technical planning

Farm families in Ward Pozas faced poverty because of poor land and water management.

Near right, water for the community used to be carried several hundred feet uphill from a spring. Far right, a livestock watering tank is part of the new water supply system.

assistance from the Soil Conservation Service.

The farmers, district representatives, and technicians from the SCS field office at Manatí worked together on a plan of action. Its main objectives were to increase annual income and to improve environmental and living conditions in the community. A conservation plan which included the installation and maintenance of recommended conservation practices was developed for each of the seven farms.

The group established improved pastures by planting recommended grass varieties, applying fertilizer and lime based on soil analysis, and by controlling weeds. They also installed permanent fences and adopted good rotation systems to prevent overgrazing.

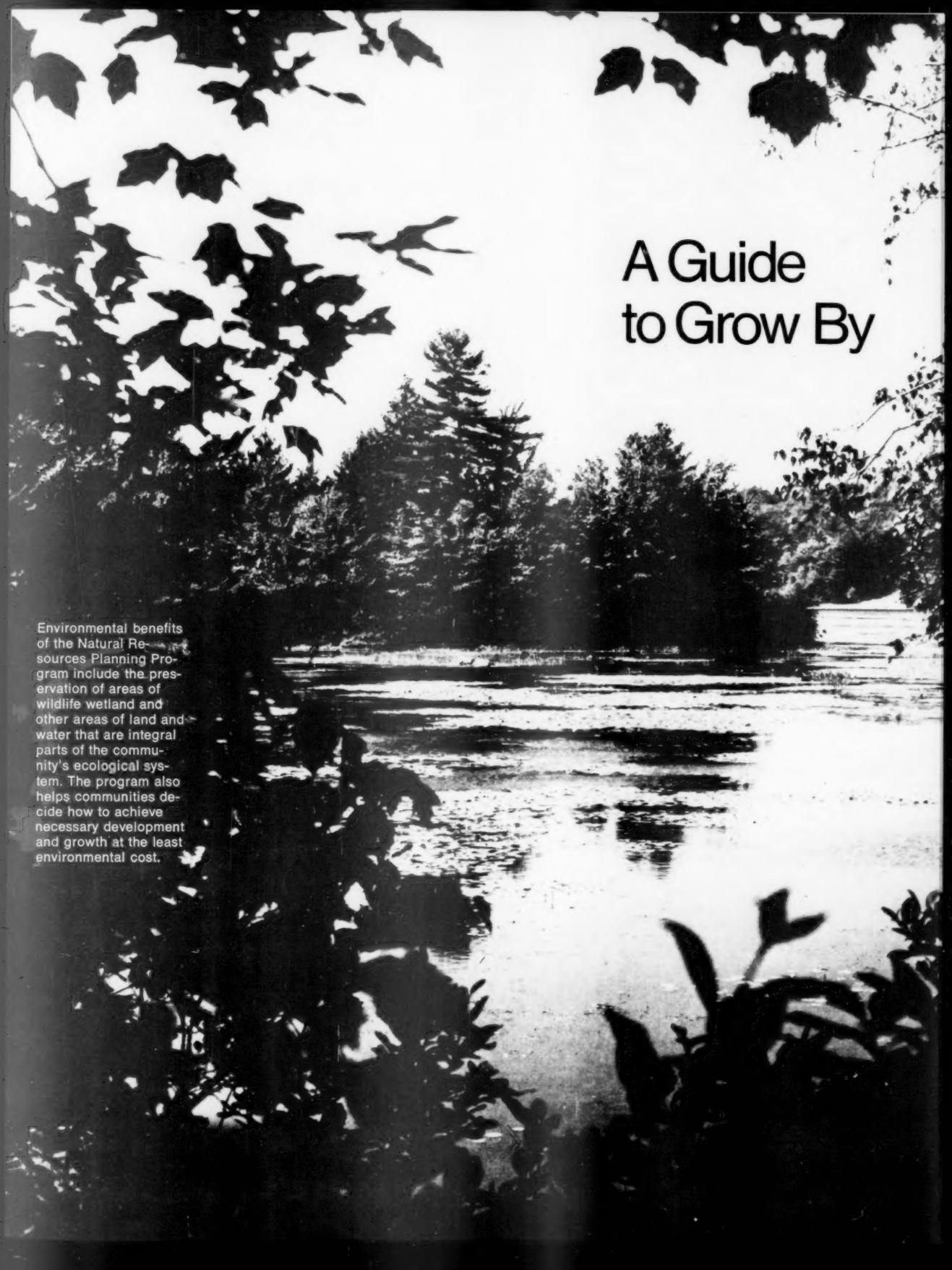
For a more dependable water supply, the group developed a permanent existing spring. The system consists of a spring box, an 8,000-gallon water storage tank, 12 troughs, and 11,360 feet of pipeline.

After months of hard work, the project was completed. Today, all seven farms have conservation agreements with the district, and benefits are much in evidence.

Annual community income has more than doubled. Because more than 100 acres of improved pastures have been established, soil erosion has been reduced considerably. The new water supply system has brought significant improvements in health and sanitation. Farmers now are less inclined to leave the community in search of a better life elsewhere.

Many of the farmers in Ward Pozas say they will continue to establish conservation practices as long as they own their farms. That idea may be catching on. Other groups are now indicating interest in organizing similar projects.

Mr. Díaz is district conservationist, SCS, Manatí, P.R.



A Guide to Grow By

Environmental benefits of the Natural Resources Planning Program include the preservation of areas of wildlife wetland and other areas of land and water that are integral parts of the community's ecological system. The program also helps communities decide how to achieve necessary development and growth at the least environmental cost.

The natural resources planning program in Massachusetts provides tools growing communities can use to make sound land-use decisions.

by Susan P. Alward

From left to right, Edward Himlan and John Joyner, graduate students in regional planning at the University of Massachusetts, and Frederic Giebel, SCS soil conservationist, study an MNRPP soils map which is an important tool in setting and meeting a community's goals for natural resource use and conservation.

Massachusetts population grew by about 1 million persons between 1950 and 1970, and the amount of urban land nearly doubled. Large amounts of agricultural land were lost as people sought the "good life" in suburban and rural areas.

Many towns grew so rapidly and indiscriminately that the qualities which had made them desirable places to live were threatened. Town governments needed a way to deal with the problems inherent in growth. For example, they needed help in determining the best site for a sanitary landfill or a new shopping center. They needed help in deciding how to provide housing and still retain open space.

To help towns in Massachusetts, the Soil Conservation Service developed a guide to making wise land-use decisions—the Massachusetts Natural Resources Planning Program (MNRPP).

The MNRPP gives local decisionmakers tools to chart a course for their community's future growth. The program helps citizens make sound land-use decisions by providing methods and technical assistance to inventory, evaluate, and analyze their community's natural resources.

The program depends on community volunteers and local government leaders. To sign up, a town board or citizen group must first request information about the MNRPP from the local conservation district.

At meetings, specialists from USDA's Science and Education Administration and SCS help conservation districts explain the program and answer questions.

One question frequently asked at the meetings is: "How much will it cost our town?" Costs are primarily for materials and supplies. For most Massachusetts communities these have run between $500 and $1,000 depending on the number, quality, and size of maps selected and on the number of reports published.

Most technical support services and assistance are provided by the Natural Resources Technical Team (NRTT) without charge. The team is made up of people from State and Federal natural resource agencies. The teams usually include representatives from SCS, the Science and Education Administration, the Massachusetts Division of Forests and Parks, and the Massachusetts Division of Fisheries and Wildlife.

Through cooperative agreements between SCS and the University of Massachusetts, Harvard University, and Yale University, graduate students also assist MNRPP communities.

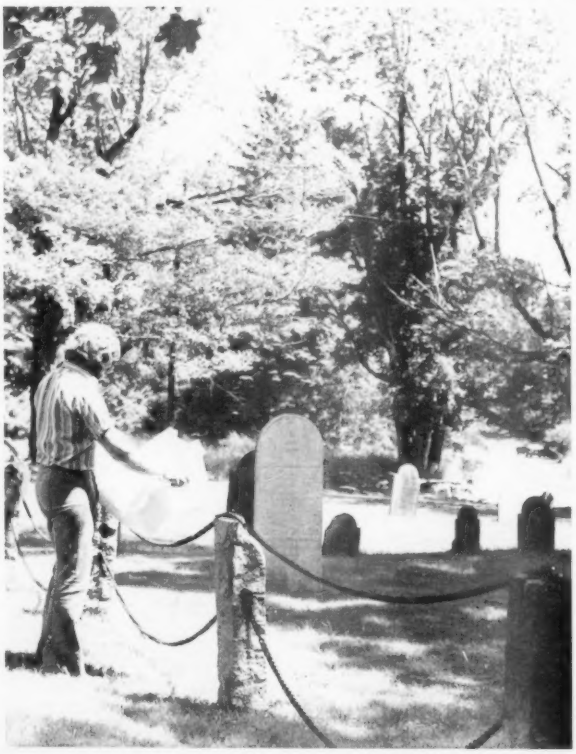
After a community decides to go ahead with the MNRPP, it submits an application to the conservation district. To be considered for the program, a community must have a soil survey completed or underway.

When the conservation district board agrees to assist a community, the district board, the community, SCS, and other NRTT agencies sign a memorandum of understanding which outlines each group's commitments. The regional planning agency and any other agencies that will help the community in the program may also sign.

The community then organizes a

Through MNRPP, towns inventory their recreation land and water and, according to their needs, plan to improve existing recreation areas or add new ones.

Hiram Peck, a student intern from the University of Massachusetts, examines an inventory map of historic sites. The map enables a community to plan development around areas it wants to preserve. The burial ground in Holden, Mass., dates back to colonial times and is on the National Register of Historic Places.



steering committee made up of representatives of local boards or commissions and interested citizen groups. The steering committee provides overall guidance for the community's MNRPP activities. The steering committee also appoints a program coordinator who insures that the many volunteers work as an effective team.

"Being an MNRPP coordinator is a fun project," said Lois Simmonds, the coordinator of North Andover's program. "But the coordinator needs to be energetic, perhaps have some experience in administration, and have lots of spare time."

The next step, making an inventory of the community's natural resources, involves citizen volunteers in collecting data and preparing maps that show the quantity, quality, and distribution of such resources as agricultural land, recreation land and water, wildlife land, wildlife wetland, and woodland.

The steering committee organizes 8 to 10 inventory committees of 2 or 3 persons each. The NRTT guides them in conducting field inventories and in compiling inventory maps. Volunteers are trained to recognize and record problems related to their community's natural resources.

During the inventory phase of the program, the NRTT also prepares any technical studies and maps that need to be made.

The inventories may be completed in a summer of intensive work or take several years. When all the inventories are completed, maps of individual resources are combined in a Present Land Use Map.

Maps showing historic sites, ecologically sensitive areas, or prime agricultural land may also be made. Combinations of these maps, with soil interpretations maps, are used to develop alternative courses of action for towns and to determine possible effects of proposed actions.

Meetings are held to acquaint the public with the inventory committees' findings. Keeping in mind the community's goals and needs, the areas best suited for future growth and development are identified.

Anyone can volunteer to join an inventory committee. Many people fit the inventory work around full-time jobs. On the island of Martha's Vineyard, many retired people helped with the MNRPP inventories in the town of West Tisbury.

"After all the inventory information is collected and organized, trends are delineated, problems identified, and opportunities for protection or improvement of natural resources explored," said Pat Hawley, an MNRPP participant.

"This lays the groundwork for natural resources information to be used as part of a community's daily planning process. It helps translate information gained through the program into a way-of-life philosophy. As a result, communities have a much stronger foundation and better tools to direct future growth."

The community charts a course of action based on the accumulated information and recommendations. Individual boards may prepare special purpose plans for conservation, outdoor recreation, sewer facilities, or other projects.

MNRPP also provides the information town officials need to decide on sites for public facilities, and it enables citizens and officials to work for preservation of what they consider valuable—such resources as wetlands, wildlife habitat, agricultural lands, and scenic views.

In the 5 years that the MNRPP has been used, more than 47 towns throughout Massachusetts have entered the program. The benefits have been many. Lenox, in the Berkshire Hills of western Massachusetts, used its MNRPP information to find a suitable landfill site.

Acton, a pilot town in the program, used the information to preserve some agricultural land. "The MNRPP information enables our town to make sound decisions about growth, instead of just reacting to it," said Rick Sherman, Acton's planner.

The town of Dennis on Cape Cod used MNRPP maps, information from their visual resources survey, and soil survey data in a 1977 revision of its town plan and zoning ordinance.

Each town that enters the program has done things a little differently, according to its needs. "The flexibility of the MNRPP is a primary factor in its success," said Mary Grimes, program coordinator for the town of Westminster.

Through MNRPP, townspeople gain a better understanding of their valuable natural resources. They know what they have and can decide what should be protected, and where development can safely occur. They are equipped with the knowledge they need to make sound land-use decisions.

The Natural Resources Planning Program is an ongoing process. Continued technical assistance is available from SCS and other NRTT agencies.

The Natural Resources Planning Program was designed by SCS for Massachusetts, but it can easily be adapted to towns and communities everywhere.

Ms. Alward is public information officer, SCS, Amherst, Mass.

Cypress Pond Attracts Wood Storks

by Anne Schuhart

The owners of a farm pond in Florida were pleasantly surprised when the pond attracted several species of birds including one on the State's list of endangered wildlife species.

When a Florida couple asked the Soil Conservation Service to plan a pond on their farm, they had no idea it would attract wood storks, which are on the State's list of endangered wildlife.

In 1964, Mr. and Mrs. W. H. Fitzpatrick asked SCS to plan a pond in a 45-acre depression on their farm in Hardee County, about 50 miles southeast of St. Petersburg, Fla.

The job was routine, except that the Fitzpatricks wanted to preserve two stands of pondcypress, called cypress domes, in the depression. Although cypress trees tolerate water better than other trees, they still must dry out sometimes.

To allow the trees to dry out, SCS designed a canal 20 feet wide and a levee around the depression. Water is 10 feet deep in the canal but only 2 to 3 feet deep under the trees in the center of the pond. An outlet with a flashboard riser was built to enable the owners to fluctuate the water

Wood storks build their nests during January through March with material such as live and dead cypress twigs, Spanish moss, wax myrtle, and saltbush which they gather at the site.

level by about 2 feet to preserve the trees.

The Fitzpatricks then designed a house and landscaped their long, sloping yard to take full advantage of the view of their new pond. They stocked the pond, and within a few years they were catching fish.

But something else was happening in the cypress pond. Herons, egrets, and white ibis began roosting and nesting in the cypress trees.

As the bird population grew, the amount of bird manure dropping into the water also increased. The nitrogen and phosphorus enriched the water so much that algae and other aquatic plants began to overproduce. By 1968, the lake became eutrophic, and the lack of oxygen in the water killed all the fish except catfish and gar.

That same year, a colony of wood storks came to the cypress pond, built 25 nests, and raised their young.

To find out why the wood storks were attracted to the cypress pond, Pete Heard, SCS environmental coordinator for Florida, studied their nesting habits.

"One reason wood storks are on Florida's list of endangered species is that their breeding behavior is so closely tied to the fluctuation of the water level in feeding areas," Heard said.

"If the water level is too high, wood storks won't nest," he explained. "When the water level is low, fish are concentrated in a smaller area. This makes it easier for the storks to feed and to feed their young. One parent stays with the nest while the other feeds, returns to the nest, and feeds the young by regurgitation.

"On the other hand, wood storks won't nest successfully unless there is some water, at least a foot deep, under the trees to protect the nests from raccoons, opossums, skunks, and other egg-eating predators.

Dead trees play a role in the wood storks' habitat. The birds prefer them for perching and resting.

"For example, in 1974, the water level in the cypress pond was allowed to remain low during the breeding season, which begins in February. On March 17, I observed about 15 nesting pairs of wood storks, but the water continued to recede. By May, when water remained only in the canal, all the wood stork nests were deserted, and no herons, egrets, or ibises were roosting or nesting there either.

"We pumped water into the pond, and rainfall helped bring the water level up again. Several thousand white ibises and cattle egrets returned to roost by mid-July, but the wood storks didn't return until the next year."

In Florida, the water table in natural cypress depressions fluctuates according to seasonal rainfall. It is generally below ground level from November through April and higher from June through August.

With the levee and flashboard

Egrets are also attracted to the cypress pond to nest. The open pasture near the pond provides the main part of their diet, grasshoppers and insects.

An outlet with a flashboard riser enables the owners to change the water level in the pond by about 2 feet.

riser, however, the water level can be manipulated to accommodate both the wood storks and the cypress trees. The pond is filled in January and maintained until the last birds leave the nests in August. The water level is allowed to drop during the fall.

About every 5 years, the pond is drained in July or August. The cypress dry out more thoroughly and excess organic material that has built up decomposes before water is pumped in for the next breeding season.

The younger trees have adapted well, but a few of the older trees have died even with the careful management.

"This cypress pond shows that man can create just as dependable a nesting place as nature," said Heard. "In fact, by manipulating the water level and managing the vegetation, man can create perfect breeding and nesting conditions every year.

"The pond has been a tremendous boon to this wood stork colony," he continued. "I haven't done a nest count this spring, but in 1977 more than 500 pairs of wood storks nested there. They averaged three young birds to a nest, which is very good because wood storks usually average only two young per nest."

The last count also showed some 6,000 cattle egret nests, more than 75 anhinga nests, 50 American egret nests, and about a dozen little blue heron nests. Heard also observed white ibis, wood duck, Florida gallinule, and red-winged blackbird nests and otter dens.

Louisiana heron, great blue heron, little green heron, yellow-crowned night heron, coots, purple grackle, red-bellied woodpecker, and barred owl feed or roost at the pond.

"The pond also attracts many migratory ducks," Heard said. "Blue-winged teal in particular use the pond as a stopover to and from their wintering grounds in South America."

In addition, alligators up to 10 feet long nest and raise young at the cypress pond. The alligators help keep predators away from the bird nests. They also, no doubt, consume any unfortunate young that fall from the nests.

Open pasture next to the pond provides food and nesting material for many of the birds. Grasshoppers and other insects, for example, make up about 80 percent of the cattle egret's diet.

The property has changed hands three times since the pond was built. But each time it was sold to people who valued the opportunity to observe wildlife from their living room.

Ms. Schuhart is a writer-editor, Information Division, SCS, Washington, D.C.

Two cypress domes frame the pond owners' house. The original owners landscaped the yard to take full advantage of the view of the pond.

Wood Chips for Fuel

by Patricia A. Paul

New York's fuel-shy North Country may have a home-grown answer to its energy needs—wood chip fuel from waste forest materials.

As coal and petroleum supplies dwindle, energy experts across the country are looking at solar, wind, nuclear, and other energy sources.

For New York's North Country—Lewis, Jefferson, Franklin, and St. Lawrence Counties—the energy answer may be wood chips.

The North Country can use all the energy help it can get. It is in a remote location with cold winter temperatures and a depressed economy. It is a "have-not" area in fossil fuels; imports of coal, oil, and gas drain badly needed dollars from the local economy.

What it does have is plenty of wood, much of which can be classified as waste—sawdust and bark discarded by sawmills, fallen trees, or other unmarketable trees. This "waste" shows promise as a commercial and industrial fuel that also is economical, readily available, and of uniform heat value.

Out of this background grew the "wood chips for fuel" project—a cooperative effort of the Black River/St. Lawrence Resource Conservation and Development (RC&D) Area, Clarkson College of Technology, and the New York State Legislative Commission on Energy Systems.

It started as a local effort; but Steve Payne, RC&D coordinator for the Soil Conservation Service, reported that a recent conference for firms considering using wood chips as fuel brought 200 people from as far away as Alabama and British Columbia.

Does wood-for-fuel deplete supplies for furniture, housing materials, and other industry products? No, said Don Neuroth, wood marketing and utilization specialist hired for the project. Nearly all the chips represent wood that no one else wants. Neuroth said that it also may be possible to develop fast-growing cash crop trees just for chips, as Canada has tested with poplar.

Is there enough waste wood in the North Country for the whole area to use as an energy source? Neuroth said yes. "There are about 75 million tons of waste wood available for fuel in the four counties. Some 2 million tons per year would provide sufficient energy for everyone in the area without damaging forest resources. This 2 million tons of wood could replace 833,000 tons of coal or 166 million gallons of oil."

According to Neuroth, less than half of each tree harvested now reaches market. About 40 percent is left in the woods to rot. Of the 60 percent that reaches the mill, only about 30 percent becomes lumber,

A whole tree chipper can process a 22-inch diameter tree, from 40 to 60 feet long, in 45 seconds.

Courtesy Syracuse Supply Company, Syracuse, N.Y.

furniture, or other products. About 20 percent ends up as sawdust and bark and 10 percent as pulpwood. The "wood chips for energy" project focuses on the unmarketable materials.

For many areas of the Northeastern United States, the use of wood chips for fuel offers several advantages over current energy sources:

- Increased logging and hauling would boost local employment.
- Fuel dollars now spent for coal and oil would remain in the area to bolster the local economy.
- Removing dead and dying trees would give healthy trees more room to grow.
- With plentiful wood supplies close by, local businesses could stockpile a 1- or 2-month supply of wood chips, instead of a year's supply of coal.
- Air quality in the Northeast should improve, since wood energy systems do not produce sulfur, as burning coal does.
- With less dependence on fossil fuels, the North Country would contribute to national energy conservation goals.

How difficult is it for a business to convert to wood chip energy—or, more technically, a "biotherm system"? Neuroth estimated that it takes about 3 to 4 months to convert a small boiler and up to a year for a bigger system. The expense can be recovered in 5 to 10 years, sometimes less.

Advances in wood harvesting equipment also are making wood energy systems more practical. Today's machinery can gobble up whole trees and reduce them to uniform-sized wood chips. Then, it can clean out dirt and sand and blow the chips into transport vans, which can be loaded and unloaded in minutes.

"With about 70 wood-processing plants in the North Country," said Neuroth, "it shouldn't be too difficult to set up a delivery system capable of meeting an increased demand."

Some wood-using industries in the North Country—like the AMF plant at Lowville and the Harden Furniture factory in McConnellsville—already use their waste wood as fuel. Harden previously consumed 350,000 gallons of oil every year. Now, it uses wood byproducts from furniture manufacturing to heat its plant.

"The challenge to our project," said Neuroth, "is to get needed information to more industries on how to take advantage of wood as an energy resource."

Late in 1977, project officials contacted every major industry in the North Country to find out how much interest there was in using wood for fuel. Response was almost 100 percent positive, although everyone agreed on the need to compare alternatives. A symposium sponsored by the project groups was well attended, and at least six local businesses now are planning for conversion to wood for fuel within the next year or two.

A few years ago, a study conducted in Vermont indicated there was enough surplus unmarketable wood fiber there each year to meet a substantial portion of the State's annual energy and heating needs. The study also reported that this surplus wood—if it were removed with proper forest management practices on a large scale—would improve the productivity, health, wildlife habitat, and appearance of woodlands, without causing environmental damage. The report concluded that a number of pilot projects are needed to take wood-for-fuel out of the theory stage. It may be past the theory stage soon. Burlington Electric, Waterbury State Hospital, and the Georgia Pacific Paper Company already use wood for fuel in Vermont. Work in the North Country of New York will test the concept further. The "wood chips" approach may prove workable in other areas that are poor in fossil fuel but rich in wood resources.

Wood chip fuel is only part of the solution to the Nation's energy problems: What works well in the North Country may not work in major metropolitan centers, such as New York City. Yet woodland covers more than half of New York State and more than three-quarters of Vermont. With plenty of wood for fuel, these and similar areas in the Northeast could change from "have-nots" to "have-lots" when it comes to energy in the 21st century.

Ms. Paul is public information officer, SCS, Syracuse, N.Y.

4-H Club Boosts Conservation

by Fred L. Trump

With a conservation demonstration farm as the focus of their interest, members of the Sunny Valley 4–H Club of Salina, Kans., became active conservationists at an average age of 11 years.

Members of the 4–H club carried out several projects for wildlife. They built brush piles (top) and planted trees and shrubs (bottom) for wildlife cover.

Most of the 20-some members of the Sunny Valley 4–H Club of Salina, Kans., are "city kids."

But their interest in resource conservation extends to rural and urban needs. Their interest surfaced within the club about 4 years ago. It took on added meaning 2 years later, when members decided to concentrate their conservation efforts on improving the Saline County Conservation District's 30-acre demonstration farm, 6 miles southeast of Salina.

In 1954, the district bought an 80-acre tract and used 30 acres as a demonstration farm and as a study area for school groups. The other 50 acres were rented to a farmer who uses conservation practices in his crop rotations.

The job proved a formidable challenge for a group of youngsters whose average age was 11, even with several high school students helping as guidance counselors.

Over the years, the cropland continued to be planted and conserved. However, interest had waned in the demonstration acreage. By the time the Sunny Valley 4–H'ers took an interest, only about 10 school groups each year used the farm as a conservation teaching aid.

When club members first toured the farm, they noticed that signs identifying the land as a demonstration area for conservation had disappeared. They found the farm pond badly silted from offsite runoff. But they also noted that the farmer-renter continued to maintain terraces and grew crops on the contour.

After the tour, members discussed

ways to rehabilitate the demonstration areas. Before presenting their proposals to the district board of supervisors, they selected a committee to discuss their ideas with the Soil Conservation Service's District Conservationist, Duane Goerend. The club members wanted to: replace the identifying signs; plant more trees and shrubs for education, beauty, and wildlife protection; establish a well-defined nature trail; find a way to prevent further silting of the farm pond; and erect a barrier to prevent vehicles from driving through a waterway and tearing up the sod.

Goerend was impressed. He felt that most of the proposals were sound and feasible. He was less optimistic about the silted pond and auto track problems, and his concern was justified: neither problem has yet been resolved successfully.

Next, then-Club President Ken Houchin appeared before the district board of supervisors to present the suggestions. The board was also favorably impressed.

The supervisors supplied a metal sign and paint, and club members painted and lettered the new sign identifying the acreage as a demonstration farm. Then, assisted by some of their fathers, District Chairman Herman Will, and Goerend, they installed the sign at a corner of the farm where two roads meet.

Over the next 2 years, the district supervisors bought 300 trees and shrubs for areas "assigned" to wildlife. The trees and shrubs included Russian olive, hackberry, honeysuckle, Scotch pine, Chickasaw plum, autumn olive, Nanking cherry, and fragrant sumac. Each spring, club members did the planting.

To establish the nature trail, the club purchased and installed six, 3-inch-wide, treated "reference posts" to mark points of interest. Members plan to add six more posts. All 12 will extend about 1½ feet above the ground. When the trail is completed, visitors can take a self-guided tour by listening to a recorded narration and referring to a duplicated instruction sheet or trail guide, on which points of interest have been numbered. Club members will paint a number on each reference post to correspond to numbers shown on the trail guide.

Using the trail guide, instructors can help students identify grasses, trees, shrubs, and other plants; soil types; wildlife habitat; and conservation practices like terraces, grassed waterways, erosion control dams, contour farming, and windbreaks. Although the trail covers only the 30 acres used for demonstration, some conservation practices on the 50 cropland acres will be visible at points along the way.

Club members expect the demonstration farm to give visitors a greater appreciation for the environment and a stronger insight into relationships among plants, animals, natural resources, and man.

While many of its activities center on the demonstration farm, the club also conducts other conservation projects. In the 2 years before they settled on the farm project as the focus of their conservation activity, some members took photographs of various conservation and land-use problems within the city of Salina. They discussed these problems on local radio and television shows. Two members took color slides of trees and shrubs in Salina parks and presented sets of the slide series to the Salina school system, the county extension office, and the local SCS office.

A club committee visited city officials to discuss bicycle paths in city parks and baseball diamonds in unused flood plain areas. All members helped raise funds for their activities by collecting newspapers and aluminum cans for recycling.

Even after the demonstration farm began occupying a large portion of their time, club members continued their other conservation efforts. With money from their recycling activities, they purchased and planted shrubs in members' back yards for songbird food and cover. Among the shrub species they selected were eastern redcedar, tatarian honeysuckle, coralberry, golden elder, aromatic sumac, and redosier dogwood.

They also purchased wildflower seeds, grew the flowers indoors, and then set out the plants at the demonstration farm and along rural roadsides. Wildflower varieties included black samson, thickspike gayfeather, purple-prairieclover, pitcher sage, compassplant, and lespedeza.

Members actively promote conservation and publicize the demonstration farm on radio and television.

Mr. Trump is public information officer, SCS, Salina, Kans.

Helping Mountain Homes Hold Their Yards

by Robert V. Carter, Jr.

Using a hydroseeder to plant a cover of grasses helped hold the soil on steep building lots in the Appalachian Mountains.

The Qualla Housing Authority of the Eastern Band of the Cherokee Indians carved building lots for 175 houses out of mountainsides in western North Carolina.

The housing authority is building the modern, brick houses as part of a self-help project for the Cherokee Indians. The houses are being built on Indian-owned land in the Appalachian Mountains under a loan from the U.S. Department of Housing and Urban Development.

The project will enable some Cherokee Indian families to move out of substandard housing.

The Indians make a downpayment on one of the houses by working 500 hours helping to clear the land, cleaning up after the workmen, or helping at the prefabrication plant where sections of the houses are assembled.

The building lots for the houses presented the biggest problem for the Qualla Housing Authority. The lots look like notches cut out of the hillside. The backyards climb steeply and the front yards fall away with the natural slope of the mountain. Erosion and sedimentation were severe problems.

The housing authority needed a quick, effective way to stabilize the bare earth. So they went to the Soil Conservation Service for help. SCS recommended using a high-pressure hydroseeder to plant the steep yards.

The Tuckaseigee Soil and Water Conservation District (SWCD), which serves mountainous Swain County, owns a truck-mounted hydroseeder which is ideal for planting steep slopes. The district uses it to plant roadways, building lots, and other areas needing critical treatment.

While each house in the project is being built, the hydroseeder is moved in and a mixture of water, mulch, fertilizer, lime, and grass seed is sprayed on the steep yards.

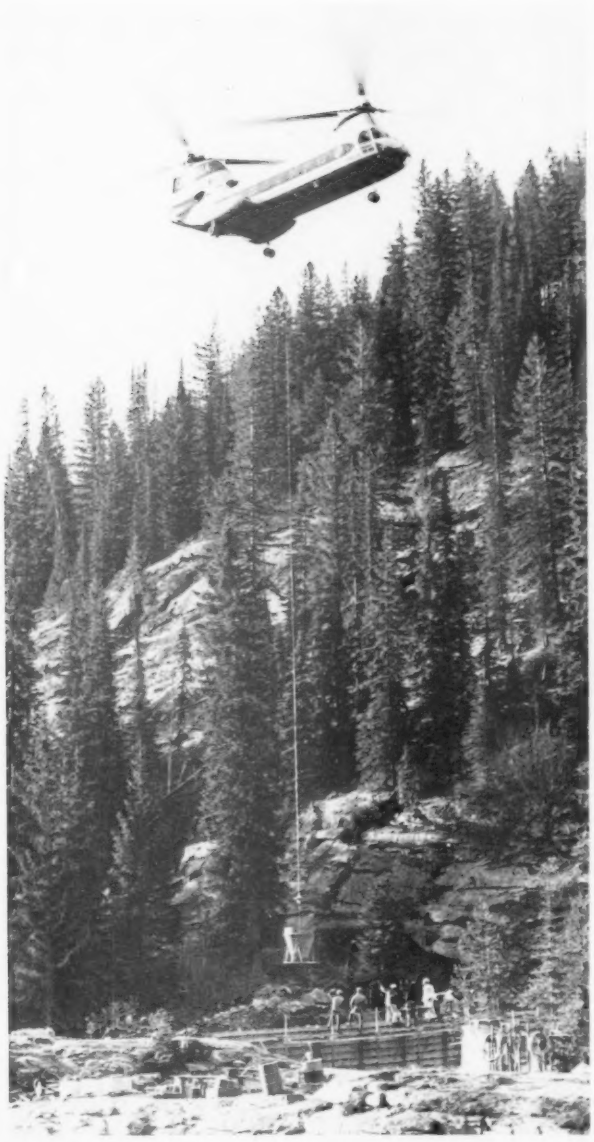
In just a few months, a lush grass cover of Kentucky 31 fescue stabilizes the yards.

The hydroseeder helped solve one of the most critical conservation problems in Swain County, according to the Tuckaseigee SWCD and SCS.

Mr. Carter is district conservationist, SCS, Bryson City, N.C.

A hydroseeder is used to plant Kentucky 31 fescue which will help stabilize the steep backyard.

Helicopter Helps Dam Builders in Wilderness Area



A helicopter delivers a 3-ton bucket of concrete to build a replacement for a 70-year-old dam in Montana's Selway-Bitterroot Wilderness. Low water during the 1977 drought gave farmers the chance to rebuild the dam. In normal years, the dam stores 3,000 acre-feet of irrigation water in the Big Creek Lakes.

Use of the helicopter made roadbuilding unnecessary through the wilderness and won the blessings of environmental groups. The Soil Conservation Service designed and inspected the dam. Cost-share funds were provided by the Agricultural Stabilization and Conservation Service under the drought-assistance program. The chopper made more than 40 trips with materials and supplies.

Youth Learn to Be at Home on the Range

by Eugene J. Handl
and Brad Anseth

Five years ago, a group of ranchers started a camp for city and country youth. Today, the camp is producing winners.

The Montana Youth Range Camp is sponsored by the Dawson County, Mont., Rangeland Resource Committee and the Northern Great Plains Section of the Society for Range Management.

"The camp was established to call attention to the importance of the rangeland resource and to educate youth to its proper use," explained Willy Milliron, rancher and resource committee chairman. The camp is open to youths between the ages of 14 and 18, and they may attend more than 1 year.

Three of the camp's participants—Richard Bonine from Miles City, Lane Carroll from Ekalaka, and Richard Sparks from Plevna—participated in a regional range judging contest in Rapid City, S. Dak., in 1976.

"We won first place in the open competition at the regional contest and we owe it to the range camp," said Sparks.

Richard Bonine, who attended camp for his third year in 1977, said, "The first year I attended the camp, I was lost. Now, with the background the camp has given me, I want to go to college and study range management."

Two 1977 camp attendees, Roger French and Lee Jacobs, were members of the Montana team at the 1977 National Range Judging Contest in Halsey, Nebr. The team won first place in the 4–H Division of the contest and Roger French was high point individual in all divisions.

SCS Range Conservationist Robert Ross explains to range camp participants how to identify range sites by the soils and plants.

In early 1978, French and Jacobs, along with their other team members, went on to the International Land, Pasture, and Range Judging Contest in Oklahoma City, Okla., where they took first place in the pasture and range judging contest.

For the past 2 years, the Old West Regional Commission, a partnership among the Federal government and State governments of Montana, Wyoming, North Dakota, South Dakota, and Nebraska, has provided grants to operate the camp. Montana soil conservation districts sponsor some of the youths.

Instructors for the sessions include area ranchers and specialists from Montana State University; the Montana Fish and Game Department; USDA's Science and Education Administration and Soil Conservation Service; and private companies. Most are members of the Society for Range Management.

The instructors take the participants to range sites and teach them basic soil types and their potential. The participants learn how to identify plants and put them into their proper category of forb, shrub, sedge, or grass. They also learn how to determine if plants are palatable, poisonous, or pest.

In sessions on range ecology, they learn how plants react to grazing pressure and the influence of livestock and wildlife. The youths eventually take their own plant clippings and determine range condition and degree of use.

For 5 years, the camp was held at a State park near Glendive in eastern Montana. In 1978, the camp was moved to Deer Lodge to allow more youths from western Montana to attend.

Mr. Handl is range conservationist, SCS, Miles City, Mont.
Mr. Anseth is public information officer, SCS, Bozeman, Mont.

News Brief

President Carter Calls for 25 New Small Watershed Projects

President Carter included in a supplementary budget request to Congress funds to finance 25 new small watershed project starts by the U.S. Department of Agriculture's Soil Conservation Service (SCS), according to M. Rupert Cutler, assistant secretary of agriculture for conservation, research, and education.

The 25 projects will cost a total of $75 million, with the President requesting an initial outlay in fiscal year 1979 of $6 million. This is in addition to a previous 1979 budget request of $142,522,000 to continue construction on 528 small watershed projects already underway.

The projects will be selected by SCS during the coming fiscal year. All will be eligible for funding as local sponsors complete preparations for construction.

The new starts were recommended by President Carter as a followup to the administration's new water resource policy.

Cutler said the President's water policy message also gave SCS approval to fund 80 percent of the cost of nonstructural measures in small watershed projects. Up to now, nonstructural measures have been paid for entirely by local sponsors.

So called "nonstructural measures" include zoning, land-use constraints, relocation of flood plain structures, purchase of flood plains for public use, and floodproofing.

Meetings:

September	
10–14	International Association of Fish and Wildlife Agencies, Baltimore, Md.
12–16	Federal Bar Association Convention, Washington, D.C.
23–28	Environmental Sanitation and Maintenance Educational Conference, Exposition, Baltimore, Md.
25–28	Interstate Conference on Water Problems, Charleston, S.C.
27–Oct. 1	American Institute of Planners, New Orleans, La.
October	
1–6	Water Pollution Control Federation, Anaheim, Calif.
6–10	American Horticultural Society Congress, Nashville, Tenn.
8–10	American Forestry Association, Hot Springs, Ark.
11–13	American Water Works Association, Chesapeake Section, Norfolk, Va.
14–17	Farm and Industrial Equipment Convention, Boca Raton, Fla.
14–18	Congress for Recreation and Parks, Miami Beach, Fla.
16–20	American Society of Civil Engineers, Chicago, Ill.
17–20	National Conference of Editorial Writers, Detroit, Mich.
21–25	American Bankers Association, Honolulu, Hawaii
23–26	The Geological Society of America, Toronto, Ontario, Canada
25–27	Adult Education Association of the United States of America, Portland, Oreg.
26–29	National Association of Biology Teachers, Chicago, Ill.
29–Nov. 1	The Irrigation Association, Palm Springs, Calif.
29–Nov. 2	American Association of State Highway and Transportation Officials, Louisville, Ky.
November	
7–10	Future Farmers of America, Kansas City, Mo.
11–13	National Agricultural Plastics Association, Miami Beach, Fla.
12–15	National Association of State Universities and Land Grant Colleges, St. Louis, Mo.
12–15	National Forest Products Association, Palm Beach, Fla.
12–16	American Institute of Chemical Engineers, Miami, Fla.
13–17	National Conference on Urban Forestry, Washington, D.C.
13–20	The National Grange, Denver, Colo.
19–22	American Society of Landscape Architects, Atlanta, Ga.

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